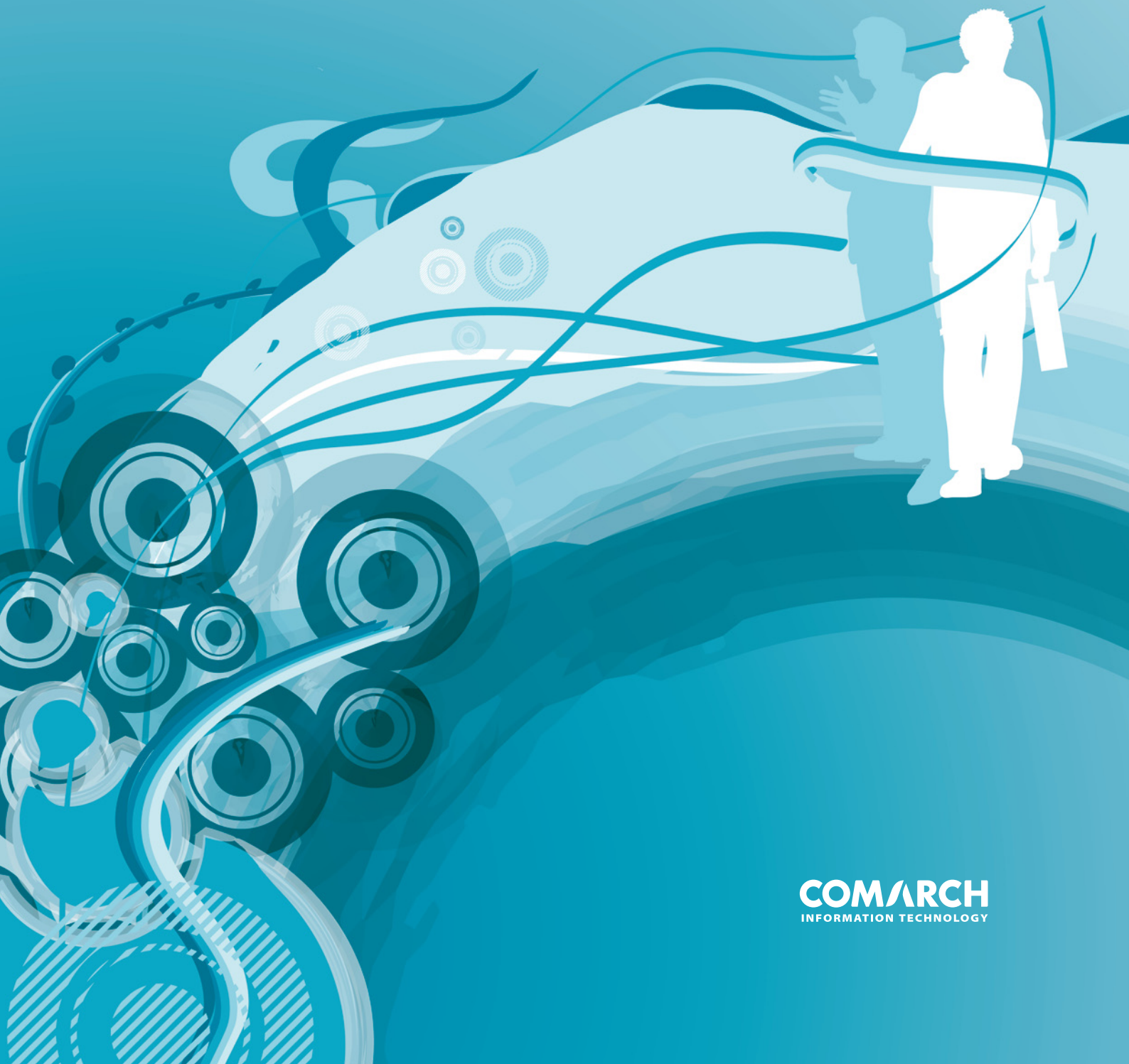# BANKING, INSURANCE & CAPITAL MARKETS

Risk Management

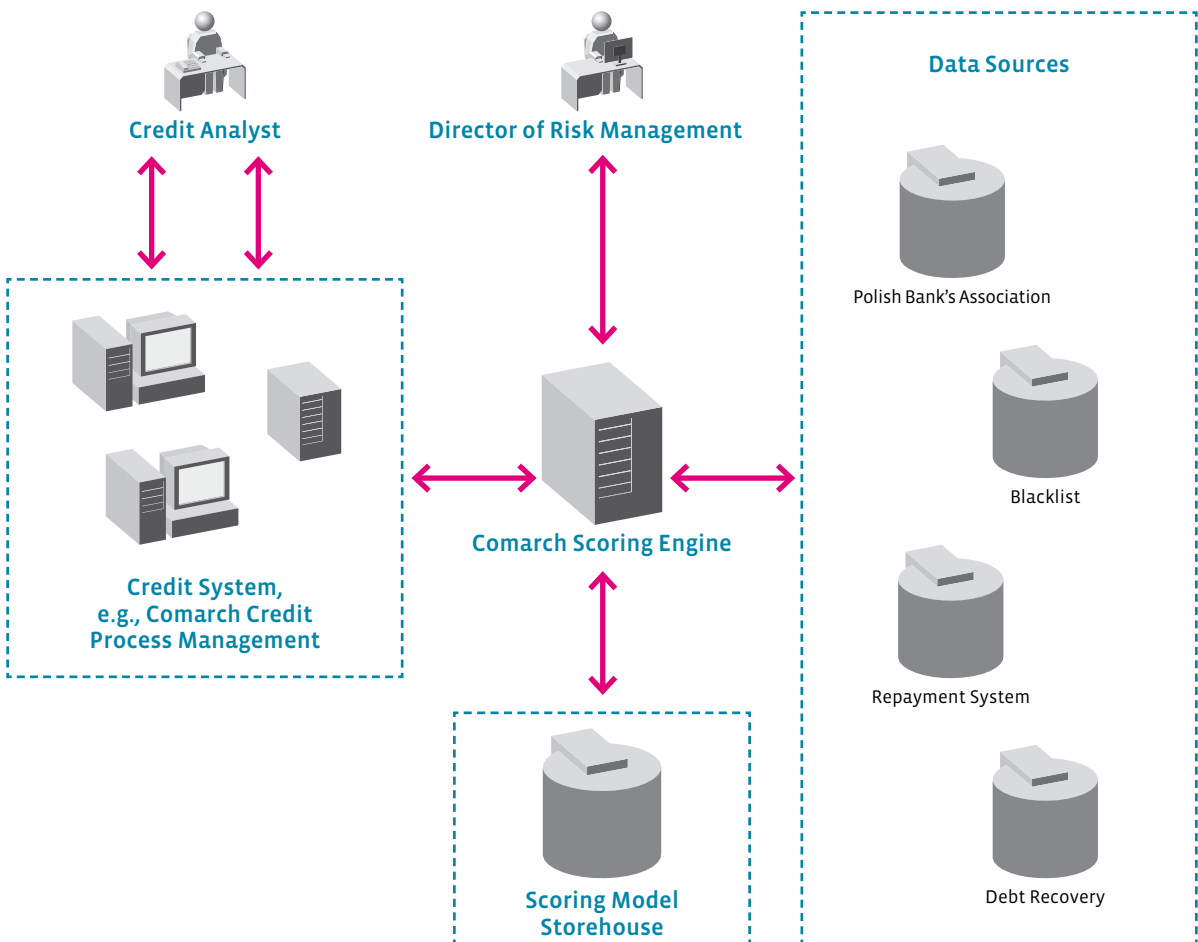## Comarch Scoring Engine

COMARCH
INFORMATION TECHNOLOGY

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Introduction

Risk management is one of the most important elements of credit policy. Accurate customer assessment when the application is checked can prevent unprofitable credit. This has a direct effect on the bank's competitiveness. Banks that manage credit risk effectively can offer better rates of interest or less stringent criteria for granting credit.

One attempt to regulate risk management is the Basel II Accord (or New Capital Accord). This commits banks to continuously monitor their operational risk. This can be done using modern techniques, such as credit scorecards. But the right IT and system infrastructure is needed to gather the data for a risk assessment data base.

Risk management using credit scorecards and scoring models demands specialist IT systems. Comarch Scoring Engine supports credit analysis by:
- Developing optimum credit strategy
- Assessing credit risk
- Analyzing the credit portfolio.

Credit Analyst

Director of Risk Management

Data Sources

Polish Bank's Association

Blacklist

Repayment System

Debt Recovery

Credit System, e.g., Comarch Credit Process Management

Comarch Scoring Engine

Scoring Model Storehouse

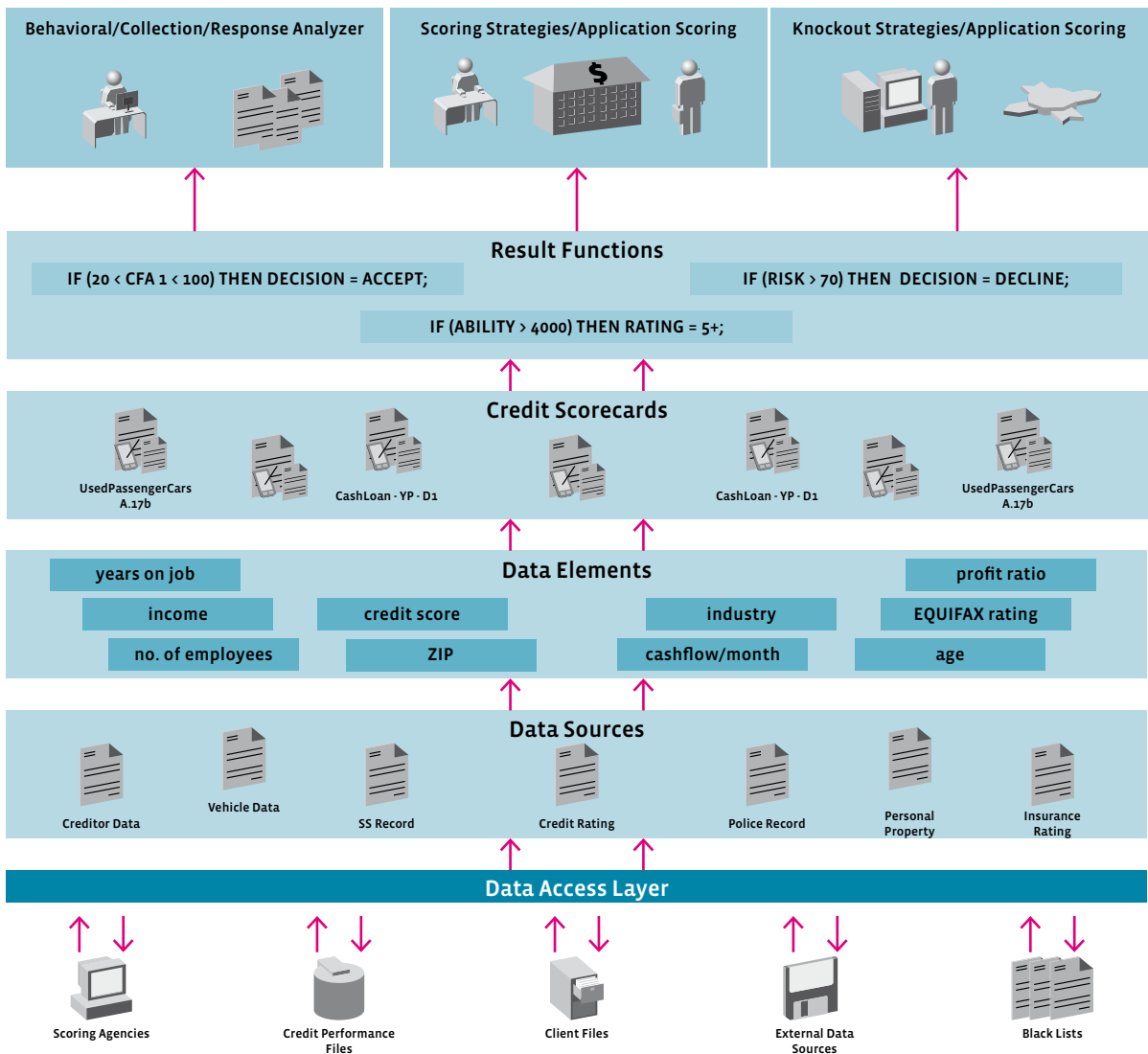*Architecture*

Benefits

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- **Fewer bad debts** – high-risk applications are separated from the others and are subject to more exacting analysis by the credit analyst
- **Time and Money Savings** – automated credit decisions based on easy-to-interpret scoring models, which reduce the time needed to make a decision
- **Higher Quality Credit Portfolio** – this unifies the rules for assessing creditworthiness and makes credit decisions more objective
- **Compliance with Basel II** – Comarch Scoring Engine is in full compliance with the New Capital Accord
- **Flexible Scoring Model** – scope to define risk models using credit generic and empirical credit scorecards
- **Data Source Variety** – using Web Services gives access to other Internet services, such as calculation libraries and customer behavior information. Data used in scoring models can also come from data bases or be freshly inputted.
- **Variety of Uses** – the Comarch Scoring Engine system is dedicated above all to risk assessment but it can be used to support other processes:
  - **Behavioral Scoring** – proactive customer service management using scoring gets the best effects from credit limit calculations, authorization checks and from marketing coordination and feedback

  - **Scoring for Marketing** – lowers the costs involved in winning new customers by determining which customers are the most valuable
  - **Profit Scoring** – for predicting the chances of losing valuable customers and deploying an effective customer retention strategy
  - **Insurance Scoring** – this is used, among other things, for automatic application checking or claims classification
- **User Friendliness** – flexible WEB interface ensures comfort of use when defining credit scorcards
- **Productivity and Scalability** – use of the most modern technology means that productivity can be regulated by adapting the system to the hardware infrastructure
- **Easily Integrates with Other Systems** – access to Comarch Scoring Engine is possible via: WebServices, SOAP, XML-over-HTTP, JMS/MQSeries and RMI. This makes it easy to integrate with other credit systems, such as Comarch Credit Process Management or document management systems.

Functionality

Scoring is most often used to assess the probability of customer behavior in different situations. A scoring system supports credit applications. It rests on anlayses of a bank or financial institution's historical customer data. Credit analysts isolate groups of variables that define groups of valuable and less valuable customers and then use these groupings to assess individual credit applications.

Comarch Scoring Engine supports this process with definitions such as: Data Sources, Data Elements, Credit Scorecards, Result Functions and Scoring Models.

Thanks to the scoring objects' unique, layered structure, **Comarch Scoring Engine enables the definition of any required customer assessment model.**

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Behavioral/Collection/Response Analyzer   **Scoring Strategies/Application Scoring**   **Knockout Strategies/Application Scoring**

Result Functions

IF (20 < CFA 1 < 100) THEN DECISION = ACCEPT;   IF (RISK > 70) THEN DECISION = DECLINE;

IF (ABILITY > 4000) THEN RATING = 5+;

Credit Scorecards

UsedPassengerCars A.17b   CashLoan - YP - D1   CashLoan - YP - D1   UsedPassengerCars A.17b

Data Elements

years on job   profit ratio

income   credit score   industry   EQUIFAX rating

no. of employees   ZIP   cashflow/month   age

Data Sources

Creditor Data   Vehicle Data   SS Record   Credit Rating   Police Record   Personal Property   Insurance Rating

Data Access Layer

Scoring Agencies   Credit Performance Files   Client Files   External Data Sources   Black Lists

Structure of scoring definitions

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Data Sources

The majority of credit scorecards use a number of different elements, including the amount of the credit, the installment repayment schedule and the standard data collected from the applicant. This can come from a variety of sources: the sales system, the credit system or the customer database. With Comarch Scoring Engine it is possible to define any required number of data sources for use in scoring assessments.

Stages in the Definition of Data Sources:
- Specifying the type of data source: database (e.g., Oracle, Sybase, MS SQL), network services and input parameters
- Defining the parameters for the data sources e.g., connection with the database
- Defining the data range using SQL and XML
- Tests and checking.

Data Elements

Before being used on the credit scorecard, information from the data sources requires selection and processing. This, for example, can concern summing up the applicant's income or calculating selected economic indicators. The data elements, which enable any required data transformation, are used to achieve this.

Stages in Defining the Data Elements:
- Choice of data sources (one or many)
- Specification of essential information
- Defining the transformations using fifty different functions, including mathematical, logical, statistical and textual
- Defining the transformation results
- Testing and checking.
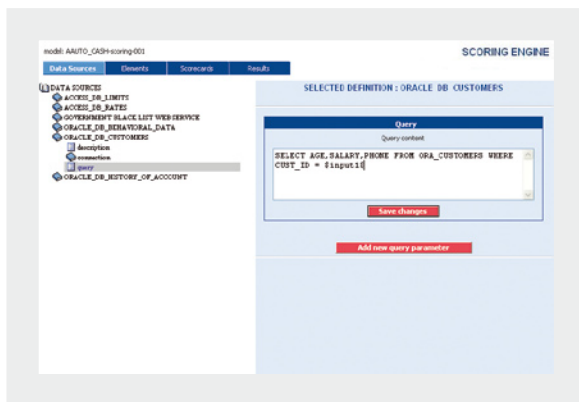
Defining data sources
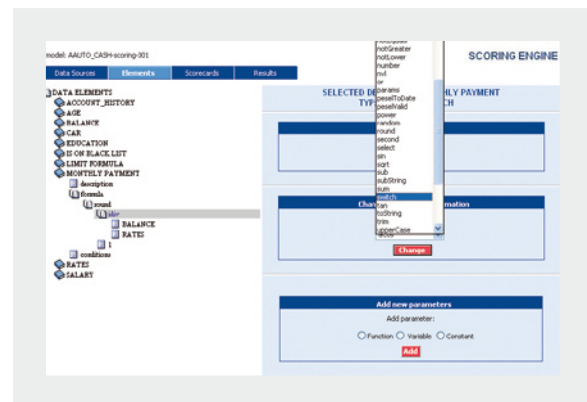
Defining data elements

Credit Scorecards

The basic tool in the risk assessment process is the credit scorecard. Comarch Scoring Engine analyses data from the credit application, or from the customer, and assists in determining the general result of the scoring model. The key elements used in the credit scorecard risk assessment are the characteristics and attributes, which are used as the base for finding customers' credit scores.

Stages in Defining the Credit Scorecard:
- Defining the characteristics
- Deciding the score for each characteristic
- Deciding the score for unfavorable characteristics, such as unemployment and low educational achievement
- Testing and calibration.

Result Functions

The system does not always automatically produce an unambiguous decision to grant or refuse credit. In these situations the credit analyst should have the opportunity to make use of additional data, such as creditworthiness, the customer's credit rating and the suggested credit decision. Responding to the input parameters and the complexity of the credit scorecard, Comarch Scoring Engine can be used to structure and organize the scoring model result

Stages in the User's Definition of the Result Functions:
- Choosing the credit scorecard
- Defining the relationship between the points and the result, for example 180 points or more on the credit scorecard signifies a positive decision, while a score in the range 150-180 indicates that further checking is required
- Defining the output data: character, number, logical value
- Testing and checking.
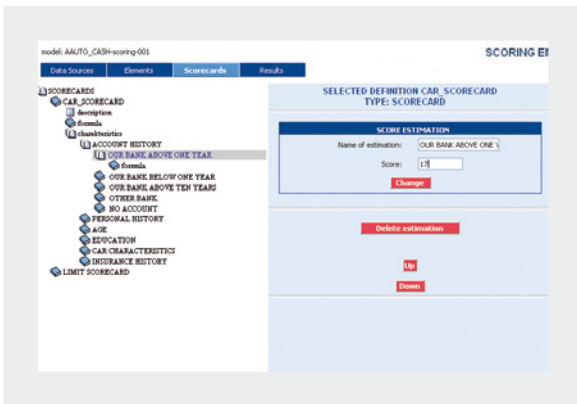
Defining the Credit Scorecard

Defining the Result Functions

Scoring Model

Comarch Scoring Engine uses scoring models to group all the definitions used during the application checking process. This provides efficient and comprehensive credit risk management.

The scoring model functionality enables:
- Scoring model calculation for the specified input parameters
- Checking the defined scoring models
- Migrating the scoring models between environments using the export/import function

- Managing versions of the models:
  - Activating the prototype model
  - Freezing the existing model
  - Creating new versions of the model
- Reviewing histories of actions performed on the model.

Comarch Scoring Engine also enables scoring models to be run and calibrated using historical data. Thanks to this, the calibration process is significantly faster and also more precise.

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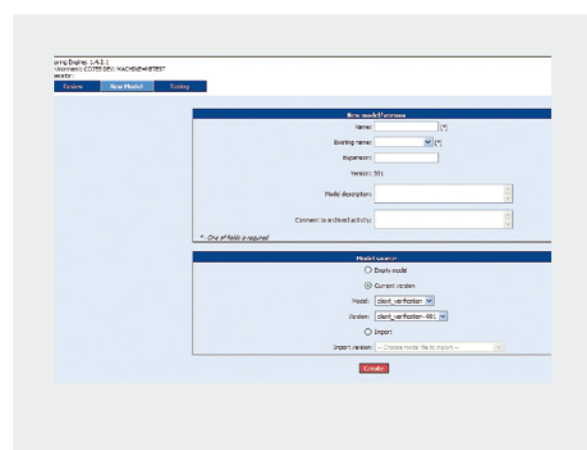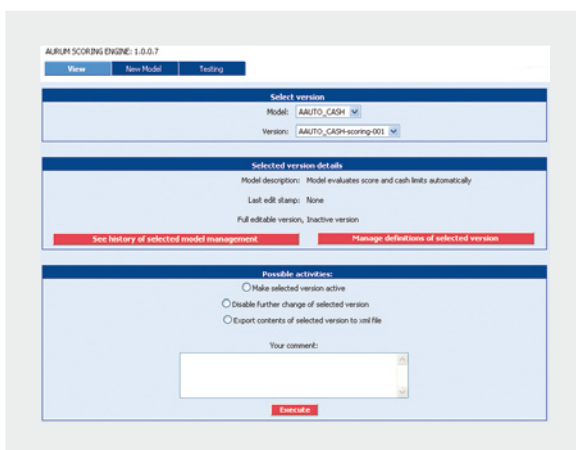
Managing the scoring model

Technology

The majority of financial institutions require credit applications to be assessed as quickly as possible. In this, choosing the right technology is the key success factor. Modern, proven solutions based on J2EE technology form the base for Comarch Scoring Engine design and implementation processes. This produces a highly productive and scalable system with low maintenance costs.

**Testing was conducted on these leading edge applications:**
- IBM WebSphere
- BEA WebLogic
- Jboss.

The testing indicated the system's high productivity in single and multi-server environments as well as in clusters.

Comarch Scoring Engine enables the use of services and data from other systems. These include credit application processing systems, data presentation tools, risk assessment systems and OLAP tools.

The Comarch Scoring Engine system has an open interface to external systems, which means that information can be exchanged easily with several systems working with it. It is also possible to use external solutions, which can expand the system's functionality or operate as specialist interfaces to other systems.

Comarch Scoring Engine uses XML technology as the basic data exchange mode. Access to resources is possible via Filesystem API, HTTP protocol, the database access module (based on ADO, ODBC and JDBC) and JMS/MQ series.

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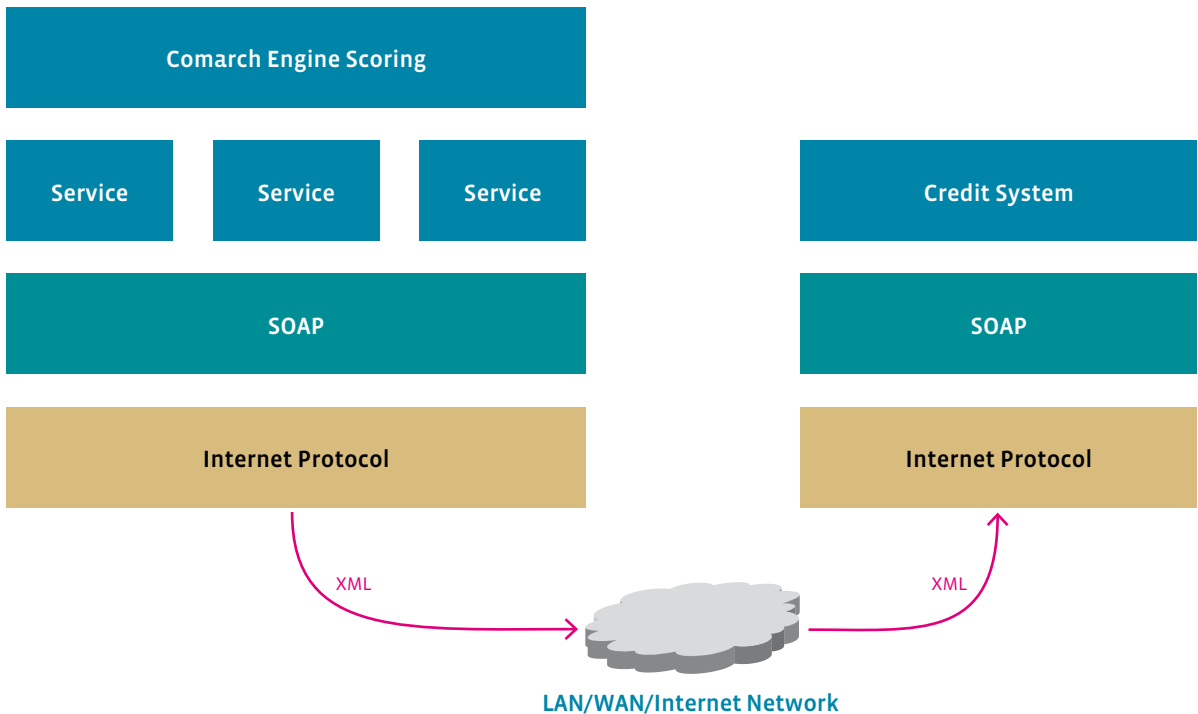
System architecture
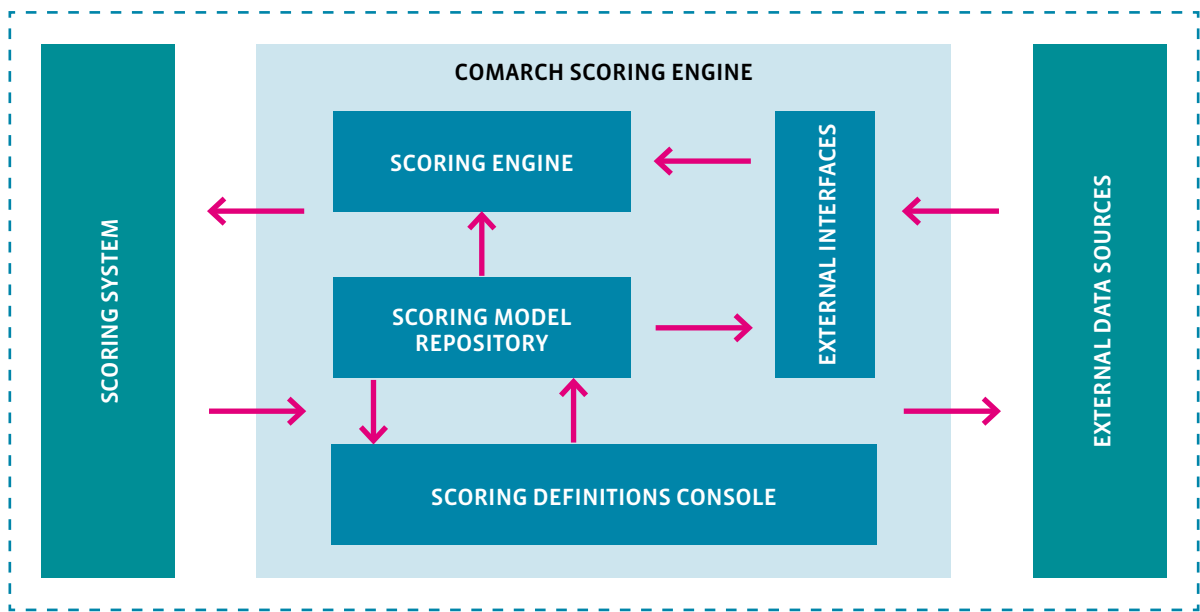
Integration with the Credit System

Comarch Scoring Engine stands as an integral part of the credit system. One of the ways it can be offered is as a module in Comarch's comprehensive credit process solution: Comarch Credit Process Management.

Integrating Comarch Scoring Engine into the credit system enables a more exact and thorough customer check within one process. Comarch Scoring Engine can take data directly from the credit system. This means that the credit analyst does not have to enter the same data many times ove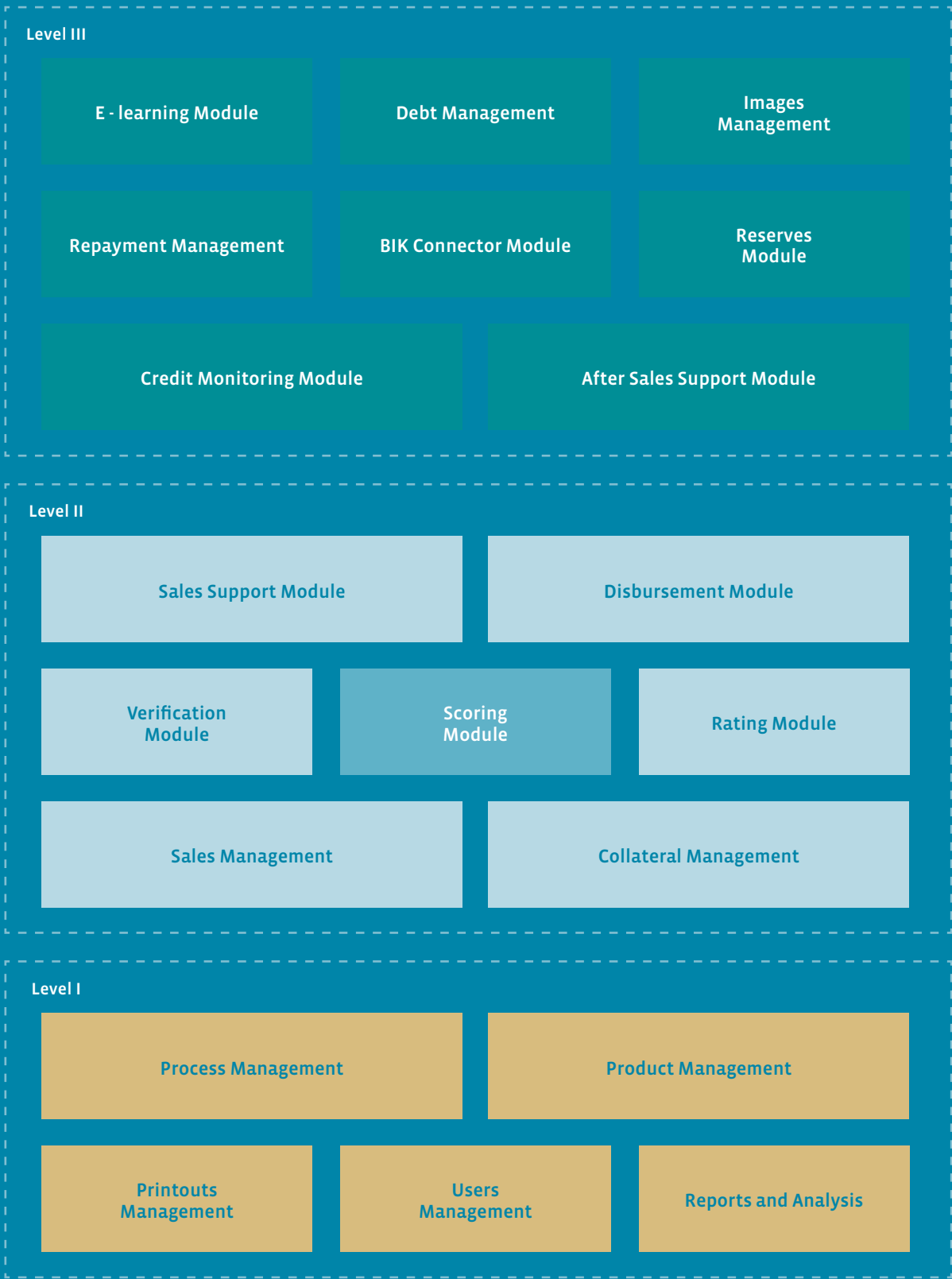r. This solution also provides rapid, automated assessment of a customer's capacity to pay his debt, shortens the time taken to consider the credit application and so improves the quality of the services offered.

Comarch Scoring Engine can also control the credit granting process. This applies, for example, where it refuses a positive decision to a person whose points score is too low. This prevents abuses of the customer checking process and makes credit decisions more objective.

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Comarch Scoring Engine – general conception of system

Level III

E - learning Module	Debt Management	Images Management
Repayment Management	BIK Connector Module	Reserves Module
Credit Monitoring Module		After Sales Support Module

Level II

Sales Support Module	Disbursement Module
Verification Module	Scoring Module	Rating Module
Sales Management	Collateral Management

Level I

Process Management	Product Management
Printouts Management	Users Management	Reports and Analysis

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Comarch Credit Process Management: Modules

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